

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)

2. (Previously Amended) A surface sensing device according to claim 3 wherein the light source and the detector are mounted to fixed structure to which the stylus is connected.

3. (Previously Amended) A surface sensing device for use in position determining apparatus and which includes a stylus having a workpiece-contacting tip and an optical transducer system, said optical transducer system comprising a light source for producing a beam of light directed internally of the stylus towards the tip of the stylus, an optical component mounted adjacent the tip of the stylus to return the beam, and a detector positioned relative to the returned beam to receive the beam and to produce a signal indicative of a lateral displacement of the stylus tip, wherein the optical component is a retro-reflecting device which is substantially insensitive to tilting of the stylus tip.

4. (Previously Amended) A surface sensing device according to claim 3 wherein the stylus forms part of a stylus assembly which comprises a relatively stiff stylus carrier and a relatively flexible stylus.

5. (Previously Amended) A surface sensing device according to claim 4 wherein the stylus carrier is connected to a housing of the device and the light source and detector are mounted to the housing.

6. (Currently Amended) A surface sensing device for use in position determining apparatus and which includes a stylus having a workpiece-contacting tip and an optical transducer system, said optical transducer system comprising:

a light source for producing a beam of light directed internally of the stylus towards the tip of the stylus;

an optical component mounted adjacent the tip of the stylus to return the beam, wherein lateral displacement of the stylus tip causes a corresponding lateral displacement of the returned beam; and

a detector positioned relative to the returned beam to receive the beam and detect an amount of lateral displacement thereof, ~~thereby producing the detector providing a~~ signal indicative of the position of a light spot falling on the detector which is produced by the returned beam, said signal thereby indicating the amount of lateral displacement of the stylus tip.

6. ~~7.~~ (Currently Amended) The surface sensing device according to claim ~~8~~⁵, wherein the detector ~~detects the direction of~~ indicates the lateral displacement of the returned beam in two dimensions, thereby producing a signal indicative of a direction of the lateral displacement of the stylus tip.

7. ~~8.~~ (Previously Added) The surface sensing device according to claim ~~8~~⁵, wherein the optical component reflects the returned beam to a focused spot.

8. ~~9.~~ (Previously Added) The surface sensing device according to claim ~~8~~⁷, wherein the spot lies substantially at an end of the stylus remote from the workpiece-contacting tip.

9. ~~10.~~ (Previously Added) The surface sensing device according to claim ~~8~~⁵, wherein the light source and the detector are mounted to fixed structure to which the stylus is connected.

10. ~~11.~~ (Previously Added) The surface sensing device according to claim ~~8~~⁵, wherein the optical component is a retro-reflecting device which is substantially insensitive to tilting of the stylus tip.

11. ~~12.~~ (Previously Added) The surface sensing device according to claim ~~8~~⁵, wherein the stylus forms part of a stylus assembly which comprises a relatively stiff stylus carrier and a relatively flexible stylus.

^{12.}
~~13.~~ (Previously Added) The surface sensing device according to claim ~~12~~^{11.}, wherein the stylus carrier is connected to a housing of the device and the light source and detector are mounted to the housing.

^{13.}
~~14.~~ (Previously Added) The surface sensing device according to claim ~~13~~^{5.} including a focusing element which receives the returned beam and directs it onto the detector.

^{14.}
~~15.~~ (Currently Amended) The surface sensing device according to claim ~~14~~^{1.}, wherein the detector ~~detects a direction of~~ indicates the lateral displacement of the returned beam in two dimensions, ~~thereby producing a signal indicative of the direction of the lateral displacement of the stylus tip.~~

^{15.}
~~16.~~ (Previously Added) The surface sensing device according to claim ~~15~~^{1.}, wherein the optical component reflects the returned beam to a focused spot.

^{16.}
~~17.~~ (Previously Added) The surface sensing device according to claim ~~16~~^{15.}, wherein the spot lies substantially at an end of the stylus remote from the workpiece-contacting tip.

^{17.}
~~18.~~ (Previously Added) The surface sensing device according to claim ~~17~~^{1.} including a focusing element which receives the returned beam and directs it onto the detector.